

REMARKS

The foregoing amendments and the following remarks are submitted in response to the communication dated June 1, 2004

Status of the Claims and Claim Objections

Claims 4, 5 and 14-17 are pending in the application. Claims 4, 5, 14 and 16 have been amended in order to more particularly point out and distinctly claim that which Applicants regard as the invention. Support for the amended claims can be found generally through Applicants' Specification.

Priority

The Examiner states that the granting of priority for the DNA sequence of SEQ ID NO:34 to the instant Application filed April 10, 2001 is proper as he asserts that there is no support for this sequence in Application Serial No. 09/623,131. Applicants respectfully disagree. The instant Application was filed as a continuation in part of U.S. Application Serial No. 09/632,131 ("the '131 Application"), which was filed on August 3, 2000. The '131 Application provides and discloses mouse and human heart alpha kinase, including the full length 1475 amino acid mouse sequence and provides 335 C-terminal amino acids and their encoding nucleic acids of human heart alpha kinase. The heart kinase catalytic domain sequence is provided in Figures 4 and 12, and compared to other catalytic domains. Further, this kinase's expression in heart is provided and evidenced in Figure 15. Each of these Figures 4, 12 and 15 are identical in the '131 Application and in the instant Application. The skilled artisan could readily and without undue experimentation isolate and determine the remaining nucleic acid and polypeptide sequence of the human heart alpha kinase, particularly utilizing the human heart alpha kinase cDNA in possession of the inventors at the time of filing of the '131 Application.

Particularity and Distinctiveness of the Claims

The Examiner has rejected Claims 4, 5 and 14-17 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

applicant regards as the invention. The Examiner acknowledges Applicants' previous claim amendments as somewhat persuasive, however claims 4, 5 and 14-17 are rejected as confusing in "mammalian heart alpha kinase". Applicants respectfully disagree and submit that the term mammalian heart alpha kinase characterizes and distinguishes the particular alpha kinase of the claims by name versus the other distinct alpha kinases provided and described in the Specification and not elected in the now pending claims and is clear to the skilled artisan, based on a reading of the pending claims and the description and characterization or naming provided in the Specification. Applicants have above amended Claims 4, 5 and 16 to incorporate language "encoding a mammalian alpha kinase expressed in the heart" to clarify the wording of the rejected claims as suggested by the Examiner and submit that this clarifying language sets out no additional limitation to the claims.

The Examiner further rejects Claim 16 in that it is confusing and redundant, particularly noting the recitation of "or degenerate variant thereof" and part c making reference to any of the foregoing sequences. Applicants have above amended Claim 16 to remove the redundant language and modified subpart c to particularly reference the DNA sequences of subparts a and b.

In view of the foregoing amendments and remarks, Applicants submit that the Examiner's rejection under 35 U.S.C. 112, second paragraph, is obviated and should be withdrawn.

The Specification Fully Enables the Claimed Invention

The Examiner has rejected Claims 4 and 14-17 under 35 U.S.C. 112, first paragraph, written description, as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the Application was filed, had possession of the claimed invention. The Examiner acknowledges Applicants' previous amendment as overcoming certain of the earlier rejections. However, the Examiner asserts that the Specification does not adequately describe the asserted claimed genus of "naturally occurring allelic variants of nucleic acids that encode SEQ ID NO:35" according to its structure so that one of skill in the art would be able to predict per se naturally occurring

sequences. Applicants respectfully point out that the Examiner's term "naturally occurring" is not present or cited in the claim language for any of the pending claims 4 and 14-17. Applicants acknowledge and agree that the claimed genus encompasses naturally occurring allelic variants of nucleic acids that encode SEQ ID NO:35, but is not limited solely to those sequences. Rather, Applicants characterize and claim the named heart alpha kinase by its sequence, its natural expression characteristics and by its alpha kinase activity. These characteristics are clear and readily determinable and testable by the skilled artisan and the skilled artisan would be able to set out and predict, for instance, the sequences of claim 4 subparts a, b and c. The genus claimed by Applicants therefore includes any such alpha kinase sequences that meet all of the claimed sequence and function characteristics. The Court of Appeals for the Federal Circuit has held that "written description of an invention involving a chemical genus, like the description of a chemical species requires a precise definition, such as by structure, formula [or] chemical name of the claimed subject matter sufficient to distinguish it from other materials". Applicants' claims set out the structure and formula (sequence), a chemical name and further and additionally set out a function, having alpha kinase activity.

The Examiner has further rejected Claims 4 and 14-17 under 35 U.S.C. 112, first paragraph, because the Examiner asserts that the Specification, while being enabling for a host cell transformed with a DNA molecule comprising SEQ ID NO: 34, does not reasonably provide enablement for any host cell transformed with any DNA sequences which hybridizes under standard conditions to the DNA sequence of SEQ ID NO: 34. Thus, the Examiner asserts, one of skill in the art would be unable to predict the structure of the other members of the genus in order to make such members. Applicants respectfully disagree and submit that the Specification clearly enables the skilled artisan to make and/or use the host cells as claimed, including those transformed with DNA sequences which hybridize under standard conditions to the DNA sequence of SEQ ID NO: 34. The isolation of hybridizing sequences is straightforward and readily performed by the skilled artisan. Applicants again assert that while some experimentation to make, test and use such host cells would be necessary, such experimentation would utilize well known methods and standard skills and would not constitute undue experimentation, particularly that which is unnecessary, improper, extensive and undue as asserted by the

Examiner. Applicants submit that a person of ordinary skill in the art could, without undue experimentation, make and use the host cells encompassed by the claims. Using the described and detailed SEQ ID NO:34, the skilled artisan could readily isolate, make and test other members of the genus of sequences hybridizing thereto under standard conditions. In addition to isolating these sequences using standard and known scientific skills and techniques, it is possible for the skilled artisan to predict, based on degeneracy of the nucleic acid code, many such DNA sequences, which are other members of the genus. The Examiner asserts that there is no description in the Specification or the art that provides particular residues whose encoding is important within the disclosed sequence. Applicants disagree and point out that, in fact, the Specification discloses and provides a comparison of the sequences, including their catalytic or kinase domains, for a number of alpha kinases, including the claimed heart alpha kinase, as well as skeletal muscle alpha kinase, melanoma alpha kinase, kidney alpha kinase, and lymphocyte alpha kinase. Sequence alignments are provided with identical and conserved amino acids designated (Figure 4) as well as an alignment of their catalytic domains (Figure 12), pointing to those particular residues which are important within the disclosed sequences. Applicants further point out that the claims set out a functional characteristic, that being alpha kinase activity, which further defines the genus and which activity is readily testable and determinable by the skilled artisan using known methods, including as described and provided in the Specification.

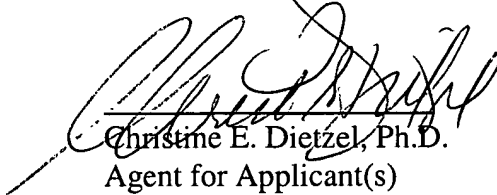
In view of the foregoing remarks, Applicants submit that the Examiner's rejection under 35 U.S.C. 112, first paragraph may properly be withdrawn.

CONCLUSION

Applicants respectfully request entry of the foregoing amendments and remarks in the file history of the instant Application. The Claims as amended are believed to be in condition for allowance, and reconsideration and withdrawal of all of the outstanding rejections is therefore believed in order. Early and favorable action on the claims is earnestly solicited.

Respectfully submitted,

KLAUBER & JACKSON

A handwritten signature in black ink, appearing to read "Christine E. Dietzel", is written over the printed name and title.

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